

N60508.AR.000166
NAS WHITING FIELD
5090.3a

LETTER REGARDING FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
COMMENTS ON SITES 9-18 DRAFT RISK ASSESSMENT RE-EVALUATION OF SOILS NAS
WHITING FIELD FL
6/27/2006
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

From: [Reed, Sarah M CIV NAVFAC SE](#)
To: [Smith, Larry -- NUS](#)
Subject: FW: Letter
Date: Friday, June 30, 2006 3:18:14 PM
Attachments: [Risk9to18review1.doc](#)
[whiting risk site 9 10 11 12 13 14 15 16 17 & 18.pdf](#)

Boo hoo.

-----Original Message-----

From: Cason, James [<mailto:James.Cason@dep.state.fl.us>]
Sent: Friday, June 30, 2006 15:05
To: Reed, Sarah M CIV NAVFAC SE
Subject: Letter

Sarah:

The attached letter has been sent on for mailing.

I am also including the 3 attachments.

<<Risk9to18review1.doc>> <<whiting risk site 9 10 11 12 13 14 15 16
17
& 18.pdf>>

Jim Cason

James H. Cason, P.G.
Florida Department of Environmental Protection 2600 Blair Stone Road
Twin Towers Building, MS 4535 Tallahassee, FL 32399-2400

Telephone: 850-245-8999

The four Golden Rules for site assessment/remediation:

For soil, delineate completely and dig to "clean," or dig out what you will and take confirmatory samples to prove you dug to "clean."

Delineate all contamination in all media vertically and horizontally.

For LUC sites, if for the Industrial scenario, delineate to Residential (not necessarily the site boundary originally designated).

Now, after all this, don't forget leachability.

On Geochemical Protocols:

"Alternative approaches in which data are pooled and then attempts are made to sort specific samples into either 'background' or 'affected' categories have serious problems and should be avoided."

"It is important that site soil and background soil samples be matched as closely as possible with respect to the geochemistry of trace metals being considered."

"Taking background samples locally will satisfy requirements in Chapter 62-780, F.A.C., which defines 'background concentrations' for use in risk assessment as coming from samples taken 'in the vicinity' of the site."

Please Note: Florida has a very broad public records law. Most written communications to or from state officials regarding state business are public records available to the public and media upon request. Your e-mail is communications and may therefore be subject to public disclosure.



Jeb Bush
Governor

Department of Environmental Protection

Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Colleen M. Castille
Secretary

June 27, 2006

Ms. Sarah Reed
Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive, PO Box 190010
North Charleston, South Carolina 29419-9010

file: Risk9to18review1.doc

RE: Reiteration of FDEP Position on: Draft Proposed Plan – Surface and Subsurface Soils at Site 13 Sanitary Landfill, Naval Air Station Whiting Field

In conjunction with a review of my position on:

Risk Assessment Re-Evaluation of Soils at Sites 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18, Naval Air Station Whiting Field.

CD-ROM: Risk Assessment Re-Evaluation of Soils at Sites 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18, Naval Air Station Whiting Field.

Dear Ms. Reed:

Pursuant to a teleconference today between Craig Benedikt, Larry Smith, Mike Jaynes and myself, this is to help clear up confusion regarding my position on the above items. Apparently, there is a lack of review or absence of attention to my review comments.

I reviewed the above risk assessment documents dated October 2004 (received October 15, 2004) and the CD-ROM of the same document dated October 2004 (received December 14, 2004). I also furnished comments from myself and copies of comments from Dr. Stephen Roberts concerning the documents (all letters are attached). As I stated in my letter of March 29, 2006 (necessitated because we were beginning to utilize those risk assessments for site evaluations and decision-making), according to my records, the document had not been formally finalized. Therefore, in order to prevent any confusion, I attached the two comment letters from Dr. Roberts dated April 27, 2005 formalizing their comments for Sites 9-13 (one letter) and Sites 14-18 (second letter). I also stated that I had been using them, and I continue to use them, in my reviews of recent documents such as the Feasibility Studies, Proposed Plans and RODs for Sites 13, 14, 17 and 18. Please note that, to my knowledge, the above risk assessment document still has not been finalized.

Today's teleconference was called to discuss the final disposition for Site 13. The Navy had initially proposed Land use Controls based on FDEP guidance for closed landfills that recommends land use controls for landfills that were closed prior to Florida promulgating formal landfill rules and/or where the contents are not known. I subsequently pointed out to Tetra Tech that there was mercury in soil in excess of the FDEP Residential Land Use Scenario SCTLs (and I had done so in my previous review letters), but that the proposed land use control would adequately address it. In the meantime, EPA reviewers noted that the Florida Landfill Guidance was not legally applicable as a remedy and took the position that NFA was the proper remedy for Site 13, not land use controls. It is my understanding that Tetra Tech subsequently pointed out the presence of mercury in the soil to Mr. Benedikt, thus the impetus for today's teleconference.

During the teleconference, I was reminded that FDEP Closed Landfill Guidance is simply guidance, to which I voiced my concurrence. It was then noted that the risk assessment (above reference documents) conducted by Tetra Tech stated that there was no risk. I replied that I had not reviewed the document recently but that my position regarding land use controls was based on the review comments from Dr. Steve Roberts at the University of Florida on the risk assessment documents, a position that was clearly stated in Dr. Robert's letter. Those comments were never addressed in a final risk assessment document. In the teleconference, there followed a lively discussion between Mr. Benedikt and myself regarding the adequacy or the paucity of soil samples. Mr. Benedikt stated that the number of samples were justifiable in conducting the risk assessment and that the sampling may have removed the contamination. At that point, I stated that from my viewpoint, there was nothing further to discuss and that I would review my six previous comment letters for Site 13 and the above risk assessment comments, following which I would clearly and unequivocally state my position regarding the remedy for Site 13.

In order to be clearly understood, my position is: Site 13 contains soil contamination consisting of mercury that was determined to be in excess of the FDEP Residential Land Use Scenario SCTL in one of three subsurface soil samples. In my opinion, the extent of mercury contamination in soil at the site has not been proven to consist entirely of the one sample it was found to be in; in other words, I consider the extent of contamination to not be adequately delineated. In order to properly address this, the Navy can place non-residential land use controls and soil excavation and removal controls on the site or it can conduct additional assessment on the site to confirm the presence or absence of this contaminant and if present, delineate that contaminant to the extent to which the FDEP Residential Scenario SCTL (or an approved equivalent) for mercury is known and properly address it. If the Navy wishes to propose a different remedy, I am willing to consider it.

As an historical (but important) footnote, over the past 10 years, the Navy has often taken the position, when I informed them that the extent of a particular type of contamination had not been adequately determined, that it would address it "during the cleanup." Now is that time.

Ms. Sarah Reed
November 13, 2008
Page Three

In order to prevent similar misunderstandings in the future, all concerned should clearly understand that I continue to review all of my previous written comments and all official comments furnished to the Navy for each site being reviewed, with the emphasis being placed on the most recent comments. Sometimes my comments are not addressed in subsequent documents; those comments however, even though they may be ignored or forgotten by some, form the basis for my response for every document I am tasked to review. That way, I believe, is the key to regulatory consistency.

I hope I have made my position clear on both the Site 13 Proposed Plan and the Risk Assessment Re-Evaluation of Soils at Sites 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18. If this is not the case, or if you need additional information or further clarification, please feel free to call me at 850-245-8999.

Sincerely,

James H. Cason, P.G.
Remedial Project Manager

Attachments (3)

CC: Craig Benedikt, US EPA Region IV, Atlanta
Ron Joyner, NAS Whiting Field
Larry Smith, TetraTech, Tallahassee

ESN____JJC____



Jeb Bush
Governor

Department of Environmental Protection

Twin Towers Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
March 29, 2006

Colleen M. Castille
Secretary

Ms. Sarah Reed
Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive, PO Box 190010
North Charleston, South Carolina 29419-9010

file: Risk9to18.doc

RE: Risk Assessment Re-Evaluation of Soils at Sites 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18,
Naval Air Station Whiting Field

CD-ROM: Risk Assessment Re-Evaluation of Soils at Sites 9, 10, 11, 12, 13, 14, 15, 16,
17 and 18, Naval Air Station Whiting Field

Dear Ms. Reed:

This is to clear up some confusion regarding the above items. I have reviewed the above document dated October 2004 (received October 15, 2004) and the CD-ROM of the same document dated October 2004 (received December 14, 2004). I also furnished you informal draft comments from myself and copies of comments from Dr. Stephen Roberts concerning the document. According to my records, the document has not been formally finalized. Therefore, in order to prevent any confusion, I am attaching two comment letters from Dr. Roberts dated April 27, 2005 formalizing their comments for Sites 9-13 (one letter) and Sites 14-18 (second letter). I have been utilizing their comments in my reviews of recent documents for some of these sites and am presently using them in evaluating Feasibility Studies, Proposed Plans and RODs for Sites 13, 14, 17 and 18. Since the above document is not a primary document, I assume it will not be formally finalized, and I have no problem with that.

Thank you for the opportunity to review this document. If you need additional information or further clarification, please feel free to call me at 850-245-8999.

Sincerely,

James H. Cason, P.G.
Remedial Project Manager

CC: Craig Benedikt, US EPA Region IV, Atlanta
Ron Joyner, NAS Whiting Field
Larry Smith, TetraTech, Tallahassee

ESN ESN JC



UNIVERSITY OF FLORIDA

Center for Environmental & Human Toxicology

P.O. Box 110885
Gainesville, Florida 32611-0885
Tel.: (352) 392-4700, ext. 5500
Fax: (352) 392-4707

April 27, 2005

Ligia Mora-Applegate
Bureau of Waste Cleanup
Florida Department of Environmental Protection
Room 471A, Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Risk Assessment Re-Evaluation at NAS Whiting Field Sites 9-13

Dear Ms. Mora-Applegate:

We have reviewed at your request the Risk Assessment Re-Evaluation of Soils at Sites 9, 10, 11, 12, 13, 14, 15, 16, 17, and 18, Naval Air Station, Whiting Field, Milton, Florida. This report was prepared by Tetra Tech NUS and is dated October, 2004. Risk assessments were conducted previously for Whiting Field in 1999 and 2000. The Re-evaluation of risks from soils at several sites within Whiting Field was undertaken in response to changes in risk assessment guidance and policy by the U.S. Navy, the U.S. Environmental Protection Agency, and the Florida Department of Environmental Protection (FDEP). The bulk of the report focuses on human health risks from direct contact with soil. Risks associated with leaching of contaminants from soil to groundwater will be addressed in a separate report. Updates of the ecological risk assessments for Sites 11 and 16 are also provided. This review covers the re-evaluation of Sites 9-13. We have several comments regarding the re-evaluation of these sites, as described below:

Statistical comparisons with background. One significant change in the re-evaluation is the method of comparison of site concentrations with background. Previously, an approach comparing ratios of soil concentrations for pairs of inorganics was used, as described in the document, *Analysis of Background Concentrations for Inorganics in Soil at Naval Air Station, Whiting Field, Milton, Florida*. We reviewed this approach and expressed several concerns to you in a letter dated June 7, 2000. The present analysis uses approaches outlined in *Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites* (EPA 540-R-01-003, September, 2002). As you know, we have previously reviewed this guidance and endorsed its use for sites in Florida. However, we have some specific concerns regarding the way this guidance was applied to data sets for Whiting Field sites. One concern involves minimum data requirements. In Appendix A, the document states that a minimum of three samples in both the site and background data sets is needed to use a parametric ANOVA. A parametric ANOVA requires knowledge of how the data sets are distributed. Although normality tests such as the Shapiro Wilk test can be conducted with as few as three samples, they perform poorly when the number of samples is small. Consequently, parametric tests should only be performed when there are sufficient data

to adequately assess the data distribution and select the most appropriate test. The U.S. EPA guidance cited in the re-evaluation recommends at least 24 data points in each group to conduct a parametric test. The background data sets do not have that many samples, yet in some cases a parametric test (principally, the Student's t-test) was used for comparison (for example, chromium in Table A-5-9).

For non-parametric tests such as the Wilcoxon Rank Sum (WRS), there are two forms of the test. Each form tests a different hypothesis. It appears from the discussion in Appendix A that only Form 1 was used. The Form 1 test in effect begins with the assumption that the site is *not* contaminated with the inorganic of interest and tests to see if this assumption can be rejected with confidence. Thus, the burden of proof is on demonstrating that the site is, in fact, contaminated with the chemical. Form 2 takes the opposite approach. It begins with the assumption that the site is contaminated, and determines whether the data can show with confidence that concentrations of the chemical on site are really representative of background conditions. Using just the Form 1 test can be un-conservative. That is, it can result in concentrations of a chemical incorrectly being characterized as background and dropped from the risk assessment. We recommend performing both Form 1 and Form 2 tests, or just the Form 2 test if only one type is conducted.

Elimination of aluminum, arsenic, iron, and vanadium. Four chemicals – aluminum, arsenic, iron, and vanadium – were eliminated from the risk assessment for all sites with the following rationale: "... these inorganics are not known to be associated with past practices or processes at any NAS Whiting Field sites. Also, surface soils associated with NAS Whiting Field disposal areas are composed of natural soil covers and do not reflect subsurface contents." These Whiting Field sites are, for the most part, disposal areas rather than areas associated with a specific chemical or process. There is always some uncertainty regarding what has been dumped historically at any disposal area, and eliminating chemicals because they cannot be tied to some specific use, practice, or event seems unjustified under the circumstances. However, the elimination of these chemicals does not appear to have compromised the risk assessment. From a practical standpoint, elimination of aluminum and iron from the risk assessment is probably not a significant issue. A risk management decision was made to consider arsenic concentrations in soils at the sites as naturally occurring, and therefore not subject to remediation (see letter to Mr. James Holland from Mr. James Cason, Remedial Project Manager for FDEP, dated April 11, 2001). For vanadium, few sites have a maximum vanadium concentration above the new residential SCTL of 67 mg/kg, and where maximum concentrations are greater than the SCTL, the exceedance is small. Consequently, vanadium is not likely to be a significant health issue. [Note: It is possible that vanadium concentrations at these sites represent natural background, but the statistical analysis to evaluate this was not presented.]

Calculation of exposure point concentrations. Exposure point concentrations in some situations are based on the 95% UCL of contaminant concentrations. The U.S. EPA ProUCL tool was used for this purpose. One limitation of the ProUCL tool is its ability to handle censored data sets. The ability of the software to select the best method for calculating a 95% UCL has not been evaluated for data sets with more than 15% censoring (i.e., more than 15% non-detects). Consequently, we do not recommend its use for those data sets. FDEP also has a software tool for calculating 95% UCL values – FLUCL – that was developed to be able to handle censored data sets. It was not used for any of the calculations in the re-evaluation, apparently because it was not

available. This is unfortunate because a high percentage of data sets for which 95% UCL values were calculated with ProUCL involve censoring more than 15%. We do not consider these 95% UCL values to be reliable.

Assessment of sites using procedures developed for Chapter 62-780, F.A.C. The re-evaluation of human health risks includes incorporation of some new, tiered risk assessment approaches developed for Chapter 62-780, F.A.C. At the time this re-evaluation was conducted, those risk assessment approaches had not been finalized, and some changes in the process were made late in rule development. Consequently, although key elements of the new FDEP procedures for risk assessments were incorporated in concept (namely, the use of 95% UCL values for comparison with cleanup targets and consideration of additive effects of chemicals in establishing cleanup targets), there are some inconsistencies between this re-evaluation and the guidance that emerged from the rule-making process. With respect to potential risks from direct contact, comments on specific sites are as follows:

- Site 9 This site has been capped with 2 ft of clean soil. Data described as representing surface soil are from a soil horizon that currently lies below the cap. Although contaminant concentrations in this soil layer appear to satisfy default residential direct exposure SCTLs, the extent of contamination below this layer is unknown, since no "subsurface" soil samples were taken. Given that this was formerly a disposal pit, it cannot be assumed that subsurface soils are clean. Consequently, direct contact risks from soils would likely be acceptable to FDEP provided access to subsurface soil is restricted through implementation of institutional controls.
- Site 10 This site has been capped with 2 ft of clean soil, and data described as representing surface soil are from a soil horizon that currently lies below the cap. Benzo(a)pyrene equivalents (BaP), barium and TRPH concentrations in surface soil exceed residential land use criteria, based on comparison of maximum concentrations with unapportioned FDEP residential SCTLs. Barium and TRPH concentrations would be acceptable under commercial/industrial land use, but BaP equivalents are above even alternative cleanup targets based on recreational land use. In the final form of Chapter 62-780, F.A.C., alternative soil cleanup targets are always apportioned to account for additive effects. In the re-evaluation of Site 10, exposure point concentrations of BaP are compared with unapportioned alternative soil cleanup targets [based on recreational exposure]. BaP is a carcinogen, and apportionment considering the presence of other carcinogens is required. Guidance allows elimination of other carcinogens from apportionment if they are present in low concentrations (1/10 default cleanup targets), are detected infrequently, or are present at or below natural background levels. We have not redone the BaP comparisons for Sites 10, but it is possible that the apportioned alternative cleanup targets would be lower than the unapportioned values used for comparison in the current re-evaluation if other carcinogens come into play. Lowering the alternative cleanup targets would not alter the conclusion presented in the report that BaP concentrations present exceed alternative cleanup targets, but it could affect remedial targets based on a recreational scenario, if those are

selected as a basis for risk management. Direct contact risks from soils would be acceptable provided the current cap remains in place. Assurance of this would require an institutional control.

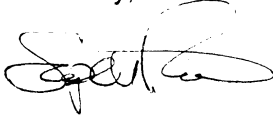
- Site 11 Dieldrin and lead concentrations in surface soil exceed residential land use criteria, based on comparison of maximum concentrations with unapportioned residential SCTLs. Contaminant concentrations in surface soil would be acceptable for commercial/industrial land use, which would require an institutional control. Maximum contaminant concentrations in subsurface soil meet unapportioned SCTLs, but only three samples were available for analysis. The limited data available for subsurface soils make it difficult to reach conclusions about subsurface soil risks.
- Site 12 No chemical was present in surface or subsurface soil samples in concentrations exceeding FDEP default residential SCTLs.
- Site 13 Maximum concentrations of contaminants in surface soils were less than unapportioned FDEP residential SCTLs. Data from only three subsurface soil samples are available. Mercury concentrations in subsurface soil are above the residential SCTL, but below the concentration limit for commercial/industrial land use. Allowing mercury contamination to remain in place would require an institutional control to either: 1) restrict the site to commercial/industrial land use; or 2) prevent excavation of subsurface soils.

Ecological risks. Site 11 was one of two sites to be evaluated for risk to ecological receptors. The ecological receptors considered were the cotton mouse, the shrew, the bobwhite, robin, hawk and fox. The robin was included in this latest update of the ERA since the Initial Assessment Study. We agree with this addition, as the robin is a sensitive receptor to various soil contaminants, particularly DDT. Comparison of maximum concentrations of soil contaminants with Region 4 Ecological Soil Screening Levels (SSLs) during direct toxicity screening is also appropriate; however, in discussing the screening level food chain modeling (FCM) it is stated that "conclusions cannot be made regarding potential risk" to the avian species considered for heptachlor and heptachlor epoxide due to an absence of an avian toxicity reference value. EPA Region 6 data may be useful in this instance, as there is an avian toxicity value listed for heptachlor in the Region 6 Screening Level Ecological Risk Assessment Protocol, Appendix E, Toxicity Reference Values.

During the refinement steps for direct toxicity, *average* site concentrations were compared with Region 4 SSLs and, in general, did not reveal significant changes in hazard quotient values, as most still remained above 1.0. We believe this refinement to be appropriate. Refinement of the FCM resulted in a reduced number of contaminants of concern for all six species being considered, and actually eliminated the mouse, bobwhite, hawk and fox from being considered at risk. However, we are in agreement that the robin should remain in consideration for risk to contaminants, especially to DDT in the vicinity of sample site 11-SL-02. We are also in agreement with the deletion of the previous toxicity testing data, as it did not include sampling at the locations of highest contamination. In addition, the lack of TOC information makes the bioavailability predictions impossible for organic compounds such as pesticides. Overall, we find the updated ecological assessment to be more appropriate than the Initial Assessment Study.

We hope that these comments are helpful for the Department in its evaluation of these sites. Please do not hesitate to contact us if you have any questions regarding our comments.

Sincerely,

A handwritten signature in black ink, appearing to read "S. Roberts", with a stylized flourish at the end.

Stephen M. Roberts, Ph.D.

A handwritten signature in black ink, appearing to read "Erin M. Hughes", with a long horizontal flourish extending to the right.

Erin M. Hughes, M.S.



UNIVERSITY OF FLORIDA

Center for Environmental & Human Toxicology

P.O. Box 110885
Gainesville, Florida 32611-0885
Tel.: (352) 392-4700, ext. 5500
Fax: (352) 392-4707

April 27, 2005

Ligia Mora-Applegate
Bureau of Waste Cleanup
Florida Department of Environmental Protection
Room 471A, Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: Risk Assessment Re-Evaluation at NAS Whiting Field Sites 14-18

Dear Ms. Mora-Applegate:

We have reviewed at your request the Risk Assessment Re-Evaluation of Soils at Sites 9, 10, 11, 12, 13, 14, 15, 16, 17, and 18, Naval Air Station, Whiting Field, Milton, Florida. This report was prepared by Tetra Tech NUS and is dated October, 2004. Risk assessments were conducted previously for Whiting Field in 1999 and 2000. The Re-evaluation of risks from soils at several sites within Whiting Field was undertaken in response to changes in risk assessment guidance and policy by the U.S. Navy, the U.S. Environmental Protection Agency, and the Florida Department of Environmental Protection (FDEP). The bulk of the report focuses on human health risks from direct contact with soil. Risks associated with leaching of contaminants from soil to groundwater will be addressed in a separate report. Updates of the ecological risk assessments for Sites 11 and 16 are also provided. This review covers the re-evaluation of Sites 14-18. We have several comments regarding the re-evaluation of these sites, as described below:

Statistical comparisons with background. One significant change in the re-evaluation is the method of comparison of site concentrations with background. Previously, an approach comparing ratios of soil concentrations for pairs of inorganics was used, as described in the document, *Analysis of Background Concentrations for Inorganics in Soil at Naval Air Station, Whiting Field, Milton, Florida*. We reviewed this approach and expressed several concerns to you in a letter dated June 7, 2000. The present analysis uses approaches outlined in *Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites* (EPA 540-R-01-003, September, 2002). As you know, we have previously reviewed this guidance and endorsed its use for sites in Florida. However, we have some specific concerns regarding the way this guidance was applied to data sets for Whiting Field sites. One concern involves minimum data requirements. In Appendix A, the document states that a minimum of three samples in both the site and background data sets is needed to use a parametric ANOVA. A parametric ANOVA requires knowledge of how the data sets are distributed. Although normality tests such as the Shapiro Wilk test can be conducted with as few as three samples, they perform poorly when the number of samples is small. Consequently, parametric tests should only be performed when there are sufficient data

to adequately assess the data distribution and select the most appropriate test. The U.S. EPA guidance cited in the re-evaluation recommends at least 24 data points in each group to conduct a parametric test. The background data sets do not have that many samples, yet in some cases a parametric test (principally, the Student's t-test) was used for comparison (for example, lead in Table A-6-8, and arsenic in Table A-8-11).

For non-parametric tests such as the Wilcoxon Rank Sum (WRS), there are two forms of the test. Each form tests a different hypothesis. It appears from the discussion in Appendix A that only Form 1 was used. The Form 1 test in effect begins with the assumption that the site is *not* contaminated with the inorganic of interest and tests to see if this assumption can be rejected with confidence. Thus, the burden of proof is on demonstrating that the site is, in fact, contaminated with the chemical. Form 2 takes the opposite approach. It begins with the assumption that the site is contaminated, and determines whether the data can show with confidence that concentrations of the chemical on site are really representative of background conditions. Using just the Form 1 test can be un-conservative. That is, it can result in concentrations of a chemical incorrectly being characterized as background and dropped from the risk assessment. We recommend performing both Form 1 and Form 2 tests, or just the Form 2 test if only one type is conducted.

Elimination of aluminum, arsenic, iron, and vanadium. Four chemicals – aluminum, arsenic, iron, and vanadium – were eliminated from the risk assessment for all sites with the following rationale: "... these inorganics are not known to be associated with past practices or processes at any NAS Whiting Field sites. Also, surface soils associated with NAS Whiting Field disposal areas are composed of natural soil covers and do not reflect subsurface contents." These Whiting Field sites are, for the most part, disposal areas rather than areas associated with a specific chemical or process. There is always some uncertainty regarding what has been dumped historically at any disposal area, and eliminating chemicals because they cannot be tied to some specific use, practice, or event seems unjustified under the circumstances. However, the elimination of these chemicals does not appear to have compromised the risk assessment. From a practical standpoint, elimination of aluminum and iron from the risk assessment is probably not a significant issue. A risk management decision was made to consider arsenic concentrations in soils at the sites as naturally occurring, and therefore not subject to remediation (see letter to Mr. James Holland from Mr. James Cason, Remedial Project Manager for FDEP, dated April 11, 2001). For vanadium, few sites have a maximum vanadium concentration above the new residential SCTL of 67 mg/kg, and where maximum concentrations are greater than the SCTL, the exceedance is small. Consequently, vanadium is not likely to be a significant health issue. [Note: It is possible that vanadium concentrations at these sites represent natural background, but the statistical analysis to evaluate this was not presented.]

Calculation of exposure point concentrations. Exposure point concentrations in some situations are based on the 95% UCL of contaminant concentrations. The U.S. EPA ProUCL tool was used for this purpose. One limitation of the ProUCL tool is its ability to handle censored data sets. The ability of the software to select the best method for calculating a 95% UCL has not been evaluated for data sets with more than 15% censoring (i.e., more than 15% non-detects). Consequently, we do not recommend its use for those data sets. FDEP also has a software tool for calculating 95% UCL values – FLUCL – that was developed to be able to handle censored data sets. It was not used for any of the calculations in the re-evaluation, apparently because it was not

available. This is unfortunate because a high percentage of data sets for which 95% UCL values were calculated with ProUCL involve censoring more than 15%. We do not consider these 95% UCL values to be reliable.

Assessment of sites using procedures developed for Chapter 62-780, F.A.C. The re-evaluation of human health risks includes incorporation of some new, tiered risk assessment approaches developed for Chapter 62-780, F.A.C. At the time this re-evaluation was conducted, those risk assessment approaches had not been finalized, and some changes in the process were made late in rule development. Consequently, although key elements of the new FDEP procedures for risk assessments were incorporated in concept (namely, the use of 95% UCL values for comparison with cleanup targets and consideration of additive effects of chemicals in establishing cleanup targets), there are some inconsistencies between this re-evaluation and the guidance that emerged from the rule-making process. Comments regarding specific sites are as follows:

- Site 14 Maximum concentrations of contaminants in surface soil meet unapportioned residential SCTLs. Maximum contaminant concentrations in subsurface soil also meet unapportioned residential SCTLs, although data from only two subsurface samples are available.
- Site 15 Maximum concentrations of contaminants in surface soil meet unapportioned residential SCTLs. Only five subsurface soil samples are available for this 21-acre site. Maximum PCB concentrations in subsurface soil are above the unapportioned residential land use SCTL, but below the value for commercial/industrial land use. Allowing PCB contamination to remain in place would require implementation of an institutional control that either: 1) restricts site use to commercial/industrial uses; or 2) prevents excavation at the site.
- Site 16 Several chemicals (BaP, barium, copper, and lead) are present in surface soil with maximum concentrations that exceed unapportioned residential land use criteria. Maximum concentrations of each of these chemicals would be acceptable under commercial/industrial land use, however. Only five subsurface soil samples are available for this 12-acre site. Subsurface soil contamination is also above unapportioned residential land use SCTLs, but meets commercial/industrial land use values. Management under a commercial/industrial land use scenario would require an institutional control.
- Site 17 This site has been capped with 2 ft of clean soil. Data described as representing surface soil are apparently from a soil horizon that currently lies below the cap. Maximum concentrations of barium, copper, and TRPH in surface soil are above unapportioned residential SCTLs. TRPH concentrations also exceed commercial/industrial land use criteria, but are below alternative cleanup targets based on recreational land use. Management of the site using commercial/industrial or alternative SCTLs would require an institutional control. Also, use of alternative SCTLs requires that the cleanup targets be apportioned. Maximum concentrations of contaminants in subsurface soils meet unapportioned residential SCTLs.
- Site 18 This site has been capped with 2 ft of clean soil. Data described as representing surface soil are apparently from a soil horizon that currently lies below the cap. Surface soil contains BaP, barium, copper, and TRPH

with maximum concentrations above unapportioned residential SCTLs. Maximum concentrations of BaP and TRPH concentrations in surface soil also exceed unapportioned commercial/industrial SCTLs. BaP concentrations were also above alternative cleanup targets based on recreational land use. For subsurface soil, TRPH concentrations exceeded residential and commercial/industrial SCTLs, but not alternative criteria based on recreational land use. Management of the site using SCTLs for either commercial/industrial or alternative (e.g., recreational) land use would require implementation of institutional controls.

In the final form of Chapter 62-780, F.A.C., alternative soil cleanup targets are always apportioned to account for additive effects. In the re-evaluation of Sites 17 and 18, exposure point concentrations are compared with unapportioned alternative soil cleanup targets [based on recreational exposure]. For TRPH, one of the chemicals of potential concern, this is not a problem. TRPH is a complex mixture of petroleum hydrocarbons, and potential additive effects of TRPH constituents are addressed conservatively in developing the soil cleanup targets. Generally, additional apportionment of TRPH cleanup goals based on the presence of other chemicals is not required. BaP, another of the chemicals of potential concern, is a carcinogen, and apportionment considering the presence of other carcinogens would be required. Guidance allows elimination of other carcinogens from apportionment if they are present in low concentrations (1/10 default cleanup targets), are detected infrequently, or are present at or below natural background levels. We have not re-done the BaP comparisons for Site 18, but it is possible that the apportioned alternative cleanup targets would be lower than the unapportioned values used for comparison in the current re-evaluation if other carcinogens come into play. Lowering the alternative cleanup targets would not alter the conclusion presented in the report that BaP concentrations present exceed alternative cleanup targets, but it could affect remedial targets based on a recreational scenario, if those are selected as a basis for risk management.

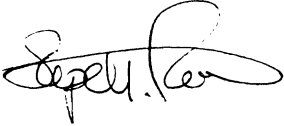
Ecological risks. Site 16 was the second of two sites that were evaluated for risk to ecological receptors. The six ecological receptors considered were the cotton mouse, the shrew, the bobwhite, robin, hawk and fox. The robin was included in this latest update of the ERA since the Initial Assessment Study. We agree with this addition as stated for Site 11 (see the March 28, 2005 review letter for Sites 9-13), since the robin is a sensitive receptor to various soil contaminants. Comparison of the maximum concentrations of the contaminants with Region 4 Ecological Soil Screening Levels in direct toxicity screening is also appropriate; however, in discussing screening level food chain modeling (FCM) it is stated that "conclusions cannot be made regarding potential risk" to the bobwhite, robin or hawk for exposure to silver due to the absence of an avian toxicity reference value. As stated for Site 11, consultation of EPA Region 6 toxicity reference values may be useful, as there is an avian toxicity value listed for silver in the Region 6 Screening Level Ecological Risk Assessment Protocol, Appendix E, Toxicity Reference Values.

During the refinement step for direct toxicity, average site concentrations were compared with Region 4 values, resulting in hazard quotients values below 1.0 for a few constituents, however, the majority of the contaminant HQs remained above 1.0. We believe this refinement to be appropriate. Refinement of the FCM resulted in a reduced number of contaminants of concern for all six species being considered, and actually eliminated the mouse, bobwhite, hawk and fox from being considered at risk. However, it

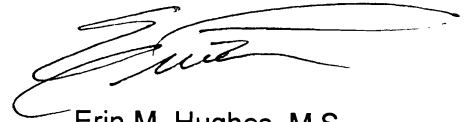
is agreed that the robin should continue to be considered at risk for exposure to several listed contaminants, especially lead. We are also in agreement with the deletion of the previous toxicity testing data, as it did not include sampling at the locations of highest contamination. In addition, the lack of TOC information makes the bioavailability predictions impossible for organic compounds such as pesticides. Overall, we find the updated ecological assessment to be more appropriate than the Initial Assessment Study.

We hope that these comments are helpful for the Department in its evaluation of these sites. Please do not hesitate to contact us if you have any questions regarding our comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Stephen M. Roberts".

Stephen M. Roberts, Ph.D.

A handwritten signature in black ink, appearing to read "Erin M. Hughes".

Erin M. Hughes, M.S.